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ABSTRACT

Described is the development of an instrument to evaluate the relationship between expenditures and effectiveness of special education programs. It is explained that the quality indicator instrument, developed through the Delphi process and refined through item analysis, consists of 38 items in seven areas, including instructional setting, instructional process, administrative support and information systems, and integration with regular classrooms. Included is a sample instrument and scoring sheet. (CL)

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SPECIAL EDUCATION INDICATORS OF QUALITY

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Rationale

This instrument was designed for use in a study of the relationship between expenditures and the effectiveness of programs in special education.

Since the amount spent on a given special education program could, in part, determine the program's characteristics, it may be theorized that higher expenditures mean higher quality.

Moreover, the quality of the instructional program should influence pupil achievement. It follows that each criterion or indicator of quality should be an essential characteristic in terms of impact on children.

Therefore, the researchers sought items or criteria that were likely to (1) reflect significant program characteristics and (2) be recognized as important by a consensus of individuals knowledgeable about special education.

Procedure for Item Construction

A pool of 200 items was developed through a comprehensive review of the literature in the field. To refine and expand this pool, interviews were held with authorities on special education in the Pennsylvania Department of Education, with special educators on college faculties (teacher preparation), with supervisors and teachers in school special education programs, and with parents and officers of various advocacy groups concerned about special education. These items were then presented to consultants, including staff of Research for Better Schools and selected intermediate unit special education directors, for suggestions about redundancies and areas not covered. A special survey of 50 special education teachers was also conducted for this purpose.

An instrument consisting of 63 items resulted from these activities. Through the Delphi, technique, that instrument would be refined further.

The Delphi technique was chosen because of its ability to produce, over successive administrations, a consensus by a large variety of experts on which items should be retained as especially important or significant measures of the quality of a special education program.

The Delphi Sample

Four groups were chosen to act as Delphi respondents: special education supervisors, teachers, college faculty and advocacy group members.

The supervisors and teachers were randomly selected from computer practiouts available from the Division of Educational Statistics of the Bureau of Information Systems in the Pennsylvania Department of Education. The college special education faculty members were chosen randomly from various catalogues and lists. Where faculty members were not specifically described in the catalogue as special education faculty, or where no catalogue was available, the research staff wrote letters asking for the names of faculty members specializing in this area. The members of the advocacy group were selected randomly from lists of personnel in associations for the handicapped and from membership lists of parent and advocacy groups known to represent the official views of these groups.

The lists thus compiled were subjected to random sampling to obtain an initial sample list of 300 teachers, 100 supervisors, 100 special education faculty and 100 advocacy group spokespersons. These lists were reduced further by deleting the people who did not wish to participate. At this point, 187 teachers, 86 supervisors, 91 faculty and 57 advocates were available as respondents. The pool of 63 items was then sent to these consenting participants.

The Delphi Consensus Process

The basic intent of the Delphi technique is to achieve a consensus. A convergence of ratings (reduced variability) over succeeding administrations of the rating scale, when feedback concerning group response is given, indicates that consensus has been achieved or at least maximized. The items surviving this process were to be placed in the final instrument used in the study.

A form containing 63 items was sent to each consenting participant for his of her response. Of the 187 consenting teachers, 113 (60.4 per cent) responded; of the 86 consenting supervisors, 66 (76.7 per cent) responded; of the 91 consenting special education faculty, 62 (68.1 per cent) responded; and of the 57 consenting advocates, 37 (64.9 per cent) responded.

The instructions asked each of the respondents to give his or her judgement as to "how important each of the present indicators of quality is in terms of impact on children." They were asked to do this by rating each item on a scale from one to five, with one representing little or no impact and five representing high impact. A rating of six, No Judgement, was permitted if the respondent did not feel competent to make the required evaluation.

In addition to these ratings, the respondents were asked to add any items they, believed reflected other important characteristics which should have been included.

The responses were tabulated, and the median response (rating) for each of the 63 items was determined. A new version of the instrument was then prepared. In this new version the median rating given by the subjects as a whole was underlined and the respondent's previous rating was circled in red. The subjects were then asked whether they wished to change their response and, if so, to circle their new choice if it differed from the group choice. In addition, they were asked to rate the impact of seven new items derived from suggestions made by respondents in round one:

There were 86 teachers, 58 supervisors, 49 faculty and 23 advocates who responded to the second-round instrument of 70 items (63 original items plus 7 new items). This was 76.1 per cent of the teachers, 87.9 per cent of the supervisors, 79.0 per cent of the college faculty and 62.2 per cent of the advocacy group who had responded to the first-round instrument.

The attrition between the number saying they would be willing to participate and the number participating in the second found of the Delphi process was 54 per cent for the teachers, 32.6 per cent for the supervisors, 46.2 per cent for the special education faculty and 59.6 per cent for the advocacy group. It was assumed that the declines (1) were not serious enough to warrant rejection of the findings, (2) grossly reflected the degree to which each group felt competent to judge the items (with the supervisors and special education faculty feeling the most competent and the teachers and advocates feeling the least competent) and (3) were partly a function of the fact that responses were requested during the summer vacation.

When each item was examined for the best combination of a high impact rating and a low variability among ratings, it was found that 16 of the 70 items had relatively high standard deviation values. These 16 items (s.d. greater than 0.86) also tended to have a lower median rating (4.06) than the items retained (4.56).

To answer the question of whether it was justifiable to analyze the responses of the raters as a whole rather than as differing according to their category (meacher, supervisors, faculty, advocate), the following analyses were done:

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	-	•			
	Advocates		-	•	1.00

The statistics were deemed sufficiently close in value and the correlations high enough to warrant the assumption of high agreement between the various groups. Therefore, all responses were combined to determine which items had a high degree of consensus and were considered most important in their impact on children.

The Resulting Quality Indicator Instrument

The Delphi process resulted in an instrument consisting of 54 items which were placed into the following categories recommended by personnel from the Division of Special Education of the Pennsylvania Department of Education:

1. instructional setting *

2. instructional techniques and related components

·3. records and reporting

4: diagnosis and evaluation

5. staff qualifications, training and development

6. supervision and administration

7. integration with the regular classroom

8. program offerings and services

The category "instructional setting" attempts to measure the physical flexibility of the classroom for all instructional purposes. The items categorized as "instructional techniques" reflect the systematic use of individualized instruction, measurement of skills at entry level and current performance, and specific instructional objectives suited to each level of mastery. The "records and reporting items reflect the maintenance of systematic and periodic records designed to permit an accurate assessment of each child's strengths and weaknesses in specific skill areas, including the results of professional examinations (vision, hearing, neurological, psychiatric, etc.) and any follow-up findings after appropriate placement. The category "diagnosis and evaluation" contains items concerning the early (preschool, where possible) identification of problem children coupled with immediate follow-through, using, wherever possible, team evaluation by a variety of specialists, including the teacher. Periodic reevaluation and parental consent for placement are also emphasized.

The "staff qualifications, training and development" items reflect the degree to which certified personnel are used or appropriate in-service training and experience exist to upgrade the staff, with full participation by staff members. The "supervision and administration" items reflect the degree to which the supervisor allots time for and encourages parent/staff conferences, develops community awareness of the program and provides leadership in the introduction of needed and beneficial changes based on new knowledge or changes in legislation. The items categorized as "integration into the regular classroom" reflect the degree and effectiveness of integration. The "program offerings and services" items reflect the adequacy of programs and the degree to which special services are available to the student or his/her parents, including the services of a registered nurse, a physical therapist, a vocational guidance counselor, a speech and hearing clinician, etc., at every level of schooling over the entire range of exceptional children, including the homebound and the multiply handicapped.

Field Testing

Four members of the research division task force visited three schools offering classes for the trainable mentally retarded (TMR), the educable mentally retarded (EMR), the physically handicapped (PH) and the socially and emotionally disturbed (SED).

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These four acted in teams of two. Both teams observed each class in a counter-balanced order over a period of two days, so that no class was observed by both teams on the same day. Using the 54-item <u>Indicator</u> of <u>Quality</u> instrument developed through the Delphi process the researchers found that the criteria for rating each item seemed workable and that there was good agreement between the raters, with few instances of a difference of more than one on the scale of one to five.

To increase reliability, a decision was made to arrive at one rating through a consensual decision process rather than using separate ratings for each of the two observers. Full-scale use of the instrument was then begun, using trained graduate students from The Pennsylvania State University as observers. These students, in teams of two, observed 388 clases. There were 74 classes for the trainable mentally retarded, 150 classes for the educable mentally retarded, 45 classes for the physically handicapped, 39 classes for the brain injured and 80 classes for the emotionally and socially disturbed. These numbers reflect sample shrinkage due to such factors as teacher strikes. The precise breakdown by type of school and category of exceptionality is found in the following table:

a :					_ `			•	· 64
	gory		•	•		of School	•		***
of	`\ '	•			'Inner	-		•	·
Exce	pt1onality	` Total	Elem.	Sec.	City	Metro.	Suburban	Rural	Mixed
	<u> </u>		•	•			•	-1, -:	
EMR		~ 150	73	. 77	32 .	42	39	· , 37 `	ð
TMR	\.	74.	44	30	1 5	19 ~	¹ 15 ¹	' / 25	0
PH	•	45	28	,17	3	5	9	. 10.	18-
SED		80	41	[′] 39	21	19 🍜	20	20 •	0
BI	-	_39 .	25 •	14	0	0	_0	. 0	39
	TOTAL	388	$\overline{211}$	177	71	185	83	92	• 57

The results from these 388 observations were then used to perform a succession of items analyses which assessed the effectiveness of individual items and the reliability of subscale and total scores.

The Item Analysis Results

The four successive item analyses resulted in a reduction of the number of items from 54 to 38. The items dropped were those that (1) did not discriminate significantly (.01 level) between high and low scoring groups (highest and lowest 27%) in the sample, (2) did not correlate well with its own subscale score, (3) did not correlate more strongly with its own subscale score than with the other subscales scores and (4) did not correlate well with the total score:

As a result of item rejection or placement into a different subscale, the Cronbach Alpha reliability coefficient for the total score did not change much, but values for the category subscales did change substantially, as shown below:

Subscale Alpha Reliabilities

Item Analysis	Total Items				and 🌹		Staff. Qual. Trng.	and	Integ. Reg. Class	Prog. Off. Serv.	Total Score	:
			ĩ		1	1			•			7
First	54	.77		.90	. 64	. 5/4	. 34	.27	.81	.62	.86	
Last	38	.87	•	.92	. 64	.71	.52	.59	. 85	.70	.87 .	

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Six of the eight subscales had an Alpha of .70 or better and were potentially useful. The commonality analysis that was used later, however, suggested a need for fewer subscales. Therefore, the researchers attempted to reduce the number of subscales through factor analysis.

Factor Analysis Findings

The original 54 items were subjected to a factor analysis using various rotations. The analysis resulted in a 16-factor solution that broke the scales down into a large number of single-item factors. Successive runs were conducted to get solutions with anywhere from two to eight factors. Analysis of these findings indicated that the best solution, i.e., the one that best preserved the original subscales while reducing the total number of subscales, was the four-factor solution. These four factors (new subscales) consisted of 38 items and were labeled as follows:

Alpha	***	•	•
, , , ,			•
(.92)	I. Instructional Process11 items .	• -	
(.83)	II. Instructional Setting13 items		<i>'</i> .
(.75)	.III. Administrative Support and Information	Systems -9	items
(.85)	IV. Integration with regular Classrooms5		

The 38 items had a Cronbach Alpha of 0.87 when subjected to a Libert analysis, while the individual subscales had the Alpha's shown above in parentheses. The items rejected by the Likert process were also rejected by the four-factor solution.

The descriptive statistics for these factor scales, based on 388 classes, follow:

Factor	Number of Items	Cronbach* Alpha	• Mean	Standard Deviation	Standard Error of Measurement
*4,	8		,		•
, I.	11	. `•.915	40,50	8.28	2.41
, 'II.	' 1 3	.827	46,60	. 8.93	· 3.72·
III.	~ . 9 ` ·	.734	35.08	# _6.00	3.09
Τ.	5	. 848	14. <i>7</i> 0	,6 _% 58	2.56
	rotal 38	.873	136.87	19.44	6.94

The factor subscales correlated with one another as follows:

1.	11	III	ΙÝ
Ī	.423	.342	•.058
LĪ '	•	.249	.146
III		* * *	.046
* T V			

No subscale had more than 16 per cent variance in common with any other subscale, and the median correlation was .20, i.e., the subscales overall tended to have only 4 per cent common variance. They are, therefore, relatively independent measures with acceptable internal consistency, as reflected by their Cronbach Alpha values.

These findings led to a decision to use the four subscales derived from the factor analysis in analyzing the results.

Items one to eleven on the attached 38-item instrument labeled Instructional Process and Related Components are those assigned to Factor Scale I, Instructional Process. Items labeled Instructional Setting and those labeled Program and Services have been assigned to Factor Scale II. Instructional Setting. Items labeled Records and Reporting, Diagnosis and Evaluation, or Supervision and Administration have been assigned to Factor Scale III, Administrative Support and Information Systems. Finally, those items labeled as Integration with the Regular Classroom Program comprise Factor Scale IV.

Limitations of the Quality Indicator Instrument

As of how, no test-retest reliability has been computed to see whether the observed criteria tend to be stable over time. Further, the instrument reflects only the consensual opinion of experts (Delphi technique) as to which quality characteristics will have an impact on the child. Further validation to see which subscales or items actually do predict achievement by the special education student is required.

Division of Research Bureau of Information Systems Pennsylvania Department of Education Box 911, Harrisburg, Pennsylvania 17126

INDICATORS OF QUALITY

Instructional Process and Related Components

Definition: These involve the skillful use and thoughtful preparation of teaching techniques that promote motivation and participation, that gain the attention of the students, that meet the needs of the individual student. This includes the systematic use of individualized instructional techniques. There are comprehensive and specific instructional objectives suited to each level of mastery.

1. The teacher has comprehensive and specific objectives for all pupils.

Some evidence of good objectives

Objectives quite comprehensive and specific

2. The teacher, skillfully gains and maintains the attention of istudents.

Most students inattentive

Attention obtained from many students

The teacher encourages each student to participate in learning activities.

Achieved participation by few Achieved some participation by many

. The work assigned is based upon needs, interests and ability of each child.

Little evidence of adapting work to students

Work is adapted to students' needs, interests and abilities

5. The teacher adjusts the techniques used to the needs of each student.

Little adjustment. (

Some adjustment of techniques

6. The teacher checks individual/student progress frequently.

Little checking of student progress

Checked student progress once or twice of at least, half the class

7. The teacher encourages and effectively handles student questions.

Little encouragement and poor handling of questions.

Moderate encouragement of and effective handling of questions

8. The teacher uses training aids effectively.

Training aids not very effectively used Training aids used reasonably well.

9. Programs for all special education students provided for individual differences.

Makes provision for less than half of the bupils Makes provision for at least half of the pupils

10. The teacher uses individual diagnosis and prescription techniques.

Work adapted to few students' ability and experience

Work adapted to many students' ability and experience

11. The time scheduling of special education students reflects an awareness of individual capabilities and tolerances.

Some evidence

Done reasonably well

To an outstanding degree

Attention obtained from all students

Achieved maximum participation of all

Work is adapted to each student's interests and abilities

Techniques adjusted for each student

Frequently checked progress of each student

Skillfully encourages and very effectively handles questions

Training aids most effectively used to expedite learning

Jeacher knows and Juggests next step for each student as he or she needs it

Work well adapted to teach student's ability and experience

Optimum time scheduling reflecting sensitivity to individual capabilities and tolerances

		· .	''	, , , , , , , , , , , , , , , , , , ,	الهام العام ال العام العام ال	7.
Ins	tructional Setting		•	•	· · · · · · · · · · · · · · · · · · ·	
te a t he sch iti	inition: The classroom is physicher, i.e., one that does not incharacteristics of the childrical setting or within ready according to the childrical setting to the childrical	place constraint en to be served cess to a regula	s upon the implementation designed to faciling school setting. Ade	non or any instructional quate and appropriate s	orocess. The classroom	is within a requ
,12.	The special education classro	om is flexible e	nough to allow a diver	sity of activities.	•	
	Rigid structured seating, no carrels, no possibility of setting up special areas.	2	Some evidence of possibility of alternative setatings	4	Consider is evider	able flexibility nt
13.°	Space in the classroom is ade	quate for the ch	ildren enrolled.	۰		•
•	Constrained space	2 .	. 3 Adequate space		. Optimum:	space
14.	Furniture in the classroom is	adequate for th	e children enrolled.		•	•
•	1 Int-fitted/difficult	2	3 Suitable, easy t	4	. , Very sui use	5 table, easy to
	to use, insufficient		use		• •	,`
15.	Equipment in the classroom is	adequate for th	e children enrolled.	·)		
, •	Inappropriate or insufficient \	2 -	3 Adequate	4	Yery app	ropriate
* 16	The special education room in	cludes alternati	ve learning centers.	` , ,		-
•	Not evident	⁴2.	Evident to a sat factory_degree	is-	´ Very eff included	
17.	Adequate classroom space and	appycopriate faci	ilities are provided fo	or itinerant services.	` 	
	Space not appropriate	2,	3 Space is appropr	° 4		5 signed and built e purposes
•		•	-		, for thes	e Rai boses
	ogram and Services.		•	. ;		•
™ ph	finition: Special services are ysical therapist, a vocational ucation. The programs and serv ltiply handicapped and include	gujdance counse: vices provided at	lor, a speech and hear re capable•of meeting i	ing clinician. etc. In	ese services are provide	d ar every level
18.	There is a continuum of progi	rams and service	s through all school ag	ges.		•
•-	None available	2	3 Available for so	om é	"Availabi	5 e for all
19.	The program has provisions fo	or the total man	ge and incidence of ex	ceptionality including	multiply handicapped.	1
	No provisions	2 .	Provisions for	some 4.	. Provisić	5 ins for 11
20.	A parent education program (parental involve	ment) is an integral p	art of the special educ	ation program.	•
`	No planned effort or planned program	2,	,3 Adequate effort •	ma de	Exceller	5 nt program
21.		to serve speech	-impaired children of	all exceptionalities fr	om kindergarten through	12th grade.
	1. Not available	The same	Available for s	4	,	5 le for all
22.	Itinerant vision and hearing	teachers work w	ith kindergarten child	reņ.	•	•
	' -] No kindergarten children	2.	3 Some kindergart	. 4	All kind	5 iergarten childre

23. The services of a physical therapist are available for students who require them.

24. A public relations effort maintains community awareness of and interest in special education.

Not available

No planned effort

ERIC

14

3 Available for some

3 Adequate_effort

Records and Reporting

Definition: The maintenance of systematic and periodic records facilitates an accurate assessment of each child's educational program and his strengths and weaknesses in each specific skill area of concern. Such records are based upon appropriate normative standal measures. This file should also include records of the results of professional examinations including vision and hearing screenings. measures. Into the should also include records of the results of professional examinations including vision and hearing screenings, neurological screening, and, where indicated, psychiatric evaluations. It should include any follow-up diagnostic findings that follow placement of a child in the special education setting in addition to preplacement evaluation. With proper safeguards, parents or guardians are given access to the file upon request and are informed of this right.

25. Appropriate examination records for each child, including psychological, vision and hearing screening, are on file.

The records do not exist for every child

Records exist for each child but in some cases not complete or up-to-

Records exist for each child, are complete and up-to-date and are accessible to teacher

Continual records (cumulative growth) of the student's attainment and progress are maintai

Not on every child

Progress records on all but irregularly mainProgressarecords on all-and regularly maintained

An educational assessment of each child, indicating strengths and weaknesses in specific skill areas, are on file.

Educational assessment not ontile for every child 🕭

Educational assessment on file for each child . ' but not always made within last three years

On file for each child and made within last three. years

E. Diagnosistand Evaluation

Definition Diagnosis and evaluation involves early (preschool, where possible), and comprehensive identification of "high risk" children coupled with immediate follow-through of prescription, assignment and appropriate andividualized instruction, using, wherever possible, team evaluation by a psychiatrist, a reurologist, etc. The special education teacher is fully capable of performing initial assessment of academic status and recognizing special problems for referral and specialized evaluation. Comprehensive evaluation for possible educational reassignment is conducted at intervals of two years. It is also conducted annually where transfer to a different type of program or service is contemplated, or upon parental request a Parental consent is obtained for transfer.

28. Preschool screening is available

Done for some

Done for many '

Done for all

There is early and comprehensive identification of "high risk" school-age children and immediate follow-through of individual prescription and instruction.

Some children are identified early

Most children are identified early and follow-through occurs

٠ ٦

All problem children are identified early and immediate follow-through

30. The educational assignment of every special education student is reevaluated not less than every two years.

Done for some

. Done for many

Done for all

F. Supervision and Administration. .

Definition The special education supervisor allots adequate time for and encourages staff/parent conferences periodically. The administrative staff attempts to maintain, by appropriate means, community awareness of the program and to stimulate public interest in the special education program. In working with the staff, the administrator or supervisor provides feadership in the introduction of needed and beneficial program changes and is cognizant of legislative and policy criteria relative to the special education program or planned change

31. The supervisor provides leadership in introducing needed and beneficial program changes.

Little leadership ,

" Regular and adequate 'leadership

Provides excellent leadership

32. Time is alloted and encouragement given for staff/parent conferences.

no ti e allotted

To a limited extent allots time

Necessary time and encouragement given for staff/parent conferences

The teacher shares information with special education associates and/or other staff. ~37·

No information is shared with other teachers

Some information is shared

5 All teachers share information



Integration with the Regular Classroom Program

access

Definition: Special education students are, where feasible, integrated into regular education programs. Children are not placed in a self-contained special education classroom as the preferred placement, but rather they are given necessary supportive services adjunctive to their regular education experiences. Activities in which regular and special education children can participate appropriately are sought and routinely encouraged. Nonhandicapped children are, in turn, encouraged by faculty attitudes and curriculum to accept and help the special education childs. Adequate and appropriate supportive resource staff and services are available to the children in either the self-contained classroom or in the regular classroom.

34. There is evidence of a systematic plan to integrate special education students into regular educational programs.

No evidence

Moderate evidence,

Special education children placed in regular classes are provided help by resource and/or special education teachers.

No help

Some assistance given

All necessary assistance given

Pupil's are given opportunities to participate in social, arts, music and physical education activities with nonhandicapped children

No provision

Part of time

On a regular basis

There is evidence that nonhandicapped children are encouraged to accept and help special education children.

Moderate evidence

Moderate evidence

Moderate evidence

All necessary assistance given

On a regular basis

Considerable evidence

Hoderate evidence

Hoderate evidence

All necessary assistance given

On a regular basis

Located within a

régular school

INDICATORS OF QUALITY (Summary Sheet)

IU No. _____ or District _ Class Code ___ Sec. Schoo1 Elem: Observer _ Teacher/. No. of children enrolled Date Observed Exceptionality: EMR _____ TMR ____ BI (LD) _____ SED ____ Phys. __

(1') 1 2 (20) 1 (2), 1 2 · (21), 1 (3) -, 1 (22) 1

> (4) 1 (23) 1 2 (5) 1 (24) 1 2 3

2

 $(6) 1 \cdot 2$ (25) 1 2 3

(7) $1 \ge 2 \ne 3$ (26) 1 2 3

(27) 1 2 E. (28) 1 2 3 4 5 (9) 1 2

·3 · (29) 1, 2, 3 (10) .1

(11) 1 -2 (30) 1 2

(12) 1 2 3 4 F: (31) 1 2

 $(13)^{4}$ (32) 13 12

(14) 1 2 (33) 1 2

(34) 1 42 34 74 1 (15) 1 2 3

(35) 1 2 (16) 1 2 3

(17) 1 2.3 (36), 1 2 3

-(18) 1. 2 3 (37) 1 / 2 3

(19) + 23. (38) 1

(8) 1